REMARKS

This Rejection is Non-Final

As confirmed in a telephone interview with the Examiner, Applicants note that this rejection is Non-Final.

Status of Claims and Amendment

Upon entry of the Amendment which is respectfully requested claim 18 will be amended. Claims 18-29, and 33-43 are pending in the application. Claims 19, 20, 22, 23 ,25, 26, 28, 29, 34, 35, and 39-43 are withdrawn as being directed to a non-elected invention. Claims 18, 21, 24, 27, 33, and 36-38 are being examined and are rejected. No new matter is added by way of this amendment.

Information Disclosure Statements

Applicants thank the Examiner for returning a signed and initialed copy of the PTO Form SB/08 that accompanied the Information Disclosure Statement filed January 3, 2006.

Response to Rejections Under 35 U.S.C. § 103(a)

Claims 18, 21, 24, 27, 33, and 36-38 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Eriksen *et al.* (USPGPUB 2004/0241790 A1) and Koffas *et al.* (USPGPUB 2002/0110885 A1) in view of Makula *et al.* (as already made of record), Koffas *et al.* (USPGPUB 2002/0137190 A1) and Belloni *et al.* (USPN 6,034,137).

The Examiner asserts that Eriksen *et al.* disclose that besides being used as sources of biomass, microorganisms may be grown and harvested to serve as sources of useful chemicals

for administration to animals. Further, the Examiner asserts that Eriksen *et al.* describe the use of methanotrophic bacteria, in particular Methylomonas 16a as a source of carotenoids.

The Examiner admits that Eriksen *et al.* do not disclose lipids.

In an attempt to rectify the deficiencies of Eriksen *et al.*, the Examiner cites to Koffas *et al.* (USPGPUB 2002/0110885 A1) to introduce the concept of bacterial lipids. The Examiner asserts that Koffas *et al.* establish a connection between carotenoids and bacterial lipids, and concludes that one of ordinary skill in the art would readily replace the carotenoids of Eriksen *et al.* with lipids from the methanotrophic bacteria in order to achieve the method of present claim 18.

As to claims 36-38, the Examiner cites to Makula *et al.* The Examiner asserts that Makula *et al.* disclose a composition of phospholipids of Methylococcus capsulatus, Methylosinus trichosporium, etc. Further, the Examiner asserts that Methylococcus capsulatus exhibited a phospholipid composition consisting of phosphatidylethanolamine with $C_{16:0}$ and/or $C_{16:1}$ fatty acid side chains, to name a few.

With respect to claims 24 and 27, the Examiner admits that Makula *et al.* neither teach a utility for phosphatidylethanolamine, nor administration to fish.

However, the Examiner cites Koffas *et al.* (0137190 Al) as teaching administration to fish of different food and feed formulations.

The Examiner alleges that the motivation to use phosphatidylethanolamine by Makula *et al.* is resolved in Belloni *et al.* According to the Examiner, Belloni *et al.* teach the use of phospholipid-related materials, such as lecithin phosphatidylethanolamine, lysolecithin, to name a few, as carriers for biologically active substances, such as drugs or nucleic acids.

The Examiner concludes that one of ordinary skill of the art would have at once recognized that the carotenoids of Eriksen *et al.* could be replaced with the lipids of Koffas *et al.* (0110885), or with Methylococcus capsulatus and Methylosinus trichosporium phospholipids of Makula *et al.* to make food and feed formulations for animals including humans and fish.

Applicants respectfully submit that the Examiner has failed to provide sufficient reasons as to why one of ordinary skill in the art would combine the teachings of the cited references to arrive at the claimed invention. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006), M.P.E.P. § 2143.01. In response, Applicants respectfully point out that the Examiner has not identified any prior art that would in any way teach, suggest or motivate the skilled artisan to administer a methanotrophic bacterial lipid extract to an animal in order to achieve any of the effects that are mentioned in the claims, specifically to reduce plasma cholesterol levels, maintain reduced cholesterol levels, or reduce the LDL:HDL plasma cholesterol ratio.

Contrary to the Examiner's assertion, Eriksen *et al.* do not disclose the limitations of instant claims 18 and 21. Claims 18 and 21 recite a method for reducing plasma cholesterol, levels, maintaining reduced cholesterol levels, or reducing the LDL:HDL plasma cholesterol ratio in animals or humans, by administration of a methanotroph-derived lipid formulation. Eriksen *et al.* disclose a method of fermentation of a Methylomonas species for the production of a biomass. Eriksen *et al.* only briefly mention that microorganisms may be grown and harvested to serve as sources of useful chemicals, *e.g.* drug compounds, proteins, carotenoids, etc. The Examiner appears to consider this portion of Eriksen *et al.* relevant, because the Examiner considers the recitation of affecting plasma cholesterol in the claims as merely an intended use,

and thus, not entitled to patentable weight. Further, the Examiner appears to indicate that the above-mentioned consequences disclosed in claim 18 are inherent teachings of the prior art. Applicants respectfully point out that as a claim to a method of treatment, the purpose of administration of the medicament is an essential technical feature of the claims. Nevertheless, and solely to advance prosecution of the present application, claim 18 has been amended to further clarify that the instant claim is directed to medical treatments producing the result "...whereby plasma cholesterol levels are reduced, a reduced cholesterol level is maintained or the LDL:HDL cholesterol ratio in plasma is reduced."

Furthermore, as noted by the Examiner, Erikson *et al.* do not specifically teach lipid compositions. Neither do Erikson *et al.* teach or suggest any medical uses for the biomass disclosed therein.

Applicants also respectfully disagree with the Examiner that Koffas *et al.* (2002/0110885) establish a connection between cartenoids and bacterial lipids. Koffas *et al.* (2002/0110885) describe genes from a Methylomonas species including those encoding enzymes involved in the carbon flux pathway from this bacterium. Specifically, Koffas *et al.* only disclose genes involved in the conversion of hexose sugars into 3-carbon metabolites in methanotrophic bacteria. Koffas *et al.* briefly mention that methanotrophs can further build the oxidation products of methane into more complex molecules such as protein, carbohydrate and lipids, and can also accumulate isoprenoid compounds and cartenoid pigments. Thus, contrary to the Examiner's assertion, one of ordinary skill of the art would have no motivation to combine Koffas *et al.* and Eriksen *et al.*, much less understand that lipids would be important, as there is hardly any logical connection between using a strain that produces carotenoids as a source for a

lipid composition, even less a lipid composition for medical use. The Examiner's rejection in this regard appears to rely solely on impermissible hindsight.

As to the Examiner's position regarding claim 37, Applicants submit that Makula *et al.* do not provide any motivation to use a specific phospholipid. Makula *et al.* describe experiments to profile lipid extracts from total cells of methane-utilizing bacteria. Specifically, Makula *et al.* disclose comparative information regarding the phospholipid composition of several bacterial strains, such as *Methylococcus capsulatus, Methylosinus trichosporium*, etc, and not one specific phospholipid. However, there is no suggestion from Makula *et al.* that a composition of lipids, *e.g.* phospholipids, from a methane-utilizing bacterium might have any medical uses. Accordingly, Makula *et al.* neither teach nor reasonably suggest that phosphatidylethanolamine should be selected as a phospholipid of choice for any reason, much less as a treatment for lowering cholesterol.

Further, Koffas *et al.* (US 2002/137190) describe the production of biomass from a high growth methanotrophic bacterial strain, Methylococcus capsulatus 16a. The biomass produced from this strain is described as being useful in animal foods and feed products. Applicants note that no medical uses are taught or suggested by this reference.

Finally, the Examiner asserts that motivation to use phosphatidylethanolamine by Makula *et al.* is resolved in Belloni *et al.*, which is alleged to disclose examples of optional co-lipids, which are phospholipid-related materials, such as lectin, and phosphatidylethanolamine, to name a few. However, Applicants disagree. The Examiner asserts that Belloni *et al.* provide the motivation to combine based on the mere disclosure of a "therapeutically effective amount" of drug carried by lipid and "the use for a mammal in need thereof." However, Belloni *et al.* describe the use of lipids to deliver biologically active substances into cells. Belloni *et al.* do not

contemplate administration of an effective amount of lipids per se for cholesterol reduction or treatment of diseases that might benefit from a reduction of or maintenance of cholesterol levels. The only mention of phospholipids in Belloni *et al.* is made in the context of using phospholipids as co-lipids. Furthermore, phosphatidylethanolamine is just briefly mentioned in Belloni *et al.* Applicants respectfully submit that the Examiner is not permitted to take a single feature of a prior art reference out of context and rely upon such a feature in that manner to show obviousness. *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 230 USPQ 416 (Fed. Cir. 1986). Applicants also note that no medical benefit whatsoever is ascribed to the phospholipids per se.

Thus, Koffas *et al.* and Makula *et al.* are of little relevance to the present invention. Eriksen *et al.* only disclose methods of fermentation of the preferred strains and no teaching can be found to prepare lipid compositions, let alone to use such lipid compositions for medical purposes. Finally, Belloni *et al.* do not link administration of lipids, *e.g.* phospholipids, with the treatment of cholesterol-related diseases.

Furthermore, the Examiner has failed to make a *prima facie* case of obviousness. The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). The Examiner has provided no articulated reasoning of why one of ordinary skill in the art would have combined the references to arrive at the claimed invention; and hence failed to establish *prima facie* case of obviousness.

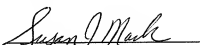
Reconsideration and withdrawal of the rejection under § 103(a) is respectfully requested.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Susan J. Mack
Registration No. 30,951

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860
WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: February 19, 2009